

Chapter 7

Natural, Cultural, and Agricultural Resources

Introduction

The prominent natural features in The Town of Holland include the Holland State Wildlife Area, Plum Creek, the East River, a series of small tributaries that are part of the Fox River watershed, small woodlots, and large tracts of farmland that all help create the rural character that defines the Town as a community. The rural character of the Town, in particular, defines the resident's quality of life due to being a dominant land use activity. This chapter examines ways to build upon agricultural, cultural, and natural resources to maintain the Town's rural character and protect the agricultural base of the Town of Holland.



Inventory and Analysis

Soils

Soil is one of the major building blocks of the environment. Soil is the interface between what lies above the ground and what lies underneath. The relationships between soil and agriculture are obvious. However, the relationships between soil and other land uses, while almost as important, are oftentimes less apparent. In Brown County, as elsewhere in North America, little attention is given to soils in regard to the location and type of future development. Among the reasons for this is the complacency by many that modern engineering technology can overcome problems associated with soils. While this is true, the financial and environmental costs associated with overcoming soil limitations can often be prohibitive.

Glaciation is responsible for the general soil conditions found in the area. Unlike areas unaffected by glaciation where soils are formed by the weathering of local bedrock, Town of Holland soils are composed of glacially eroded rock material that was carried by ice sheets or from surface material that was pushed by the advance of the glacier. When the glacial advance stopped, the ice sheets melted and deposited the materials it had carried over the area. These deposited materials are called glacial till or outwash and, together with other soil forming factors, including vegetation, have formed the soil that covers the Town of Holland today. According to the Soil Survey of Brown County, Wisconsin, there are four major soil associations present in the Town of Holland. A soil association is "a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils, at least one minor soil, and is named for the major soils." The major soil associations found in the Town of Holland are the Kewaunee-Manawa Association, Oshkosh-Manawa Association, Waymore Hochheim Association, and the Carbondale-Cathro muck Association.

Kewaunee-Manawa Association

Found mostly on the western half of the Town of Holland, the Kewaunee-Manawa Association consists of soils of glacial till plains, ridges, in depressions, and along drainageways. The soils are gently sloping to steep with a surface layer of sandy loam or silt loam that is generally eight inches thick. The dark reddish

subsoil is typically about 19-22 inches thick. The soils are suited for cultivation of all crops grown in Brown County, including oats, corn, alfalfa, and brome grass for hay. Uncultivated areas are typically wooded or used for pasture. Soil erosion and providing drainage is a concern. The clayey subsoil makes home sites and non-agricultural uses difficult for conventional private on-site wastewater treatment system drain fields.

Oshkosh-Manawa Association

Found along the STH 32/57 corridor and in the far northwestern part of the Town of Holland, Oshkosh-Manawa Association consists of deep, well drained to somewhat poorly drained, nearly level to steep soils that have a dominantly clayey subsoil; on glacial lake plains dissected by narrow V-shaped valleys. Most of the soils in this association are cultivated and are suited to all of the crops commonly grown in Brown County. Controlling erosion and tilth, providing proper drainage, and maintaining soil fertility are common management concerns. The clayey subsoil can be a severe limitation to use for home sites or other non-farm purposes, particularly for those with conventional septic systems.

Waymor-Hochheim Association

Found along the southern border of the Town of Holland, the Waymor-Hochheim Association consists of soils of glacial till plains and ridges. The soils are nearly level to moderately steep with a surface layer of silt loam or sandy loam that is typically nine inches thick. The dark reddish subsoil is usually about 21 inches thick. Most of this association is used for dairy farming. The soils are well suited for cultivation of all crops grown in Brown County, including oats, corn, alfalfa, beans, wheat, and brome grass for hay. Uncultivated areas are typically poorly drained and are wooded or used for pasture. Erosion control is problematic with this association, but the soil characteristics are generally favorable for conventional private on-site wastewater treatment system drain fields.

Carbondale-Cathro Association

Found in small pockets in the central part of the Town of Holland, the Carbondale-Cathro Association consists of very deep, very poorly drained, nearly level organic soils found on glacial lake and outwash plains and ridges that have sandy subsoils. Where the soils in this association are drained, they are moderately well suited to all of the crops commonly grown in Brown County. Controlling drainage and water table levels are necessary. Use of these soils for urban or rural development is severely limited.

Prime Farmland

The Soil Survey of Brown County, Wisconsin, defines prime farmland as soils with capability classes of I and II. Class I soils have few limitations that restrict their use, while Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices. Based upon the Soil Survey, approximately 14,073 acres (61.1%) of all of the land within the Town is considered prime farmland.

There are two main areas in the Town where prime agricultural soils do not exist. The Holland Wildlife Area, as well as the large wetland complex in the southeastern portion of the Town, contain wetlands and/or are wooded. These conditions reduce the soil's potential to be classified as prime farmland.

Productive Agricultural Lands

The Brown County Farmland Preservation Plan identifies Brown County's farmlands as irreplaceable resources that are necessary to the continued well-being of the County's economy. The plan further states that the protection of these farmlands and orderly rural and urban growth are deemed to be in the broad public interest.

Agriculture is by far the predominant land use within the Town, accounting for over 60 percent of the land uses (including agricultural buildings) within Holland. The state wildlife area and the large wetland complex in the southeastern corner of the Town are not farmed due to poor soils and protected areas.

Based on the most recent land use inventory, the Town of Holland has 14,073 acres of productive farmland (cropland and pasture). This amounts to 61.1 percent of the Town.

There are multiple factors that define productive agricultural lands. Soils are included if they are defined as being prime farmland without any limitations in the Soil Survey of Brown County, Wisconsin. If a soil is prime farmland but currently in a developed state, it is not included. Also included are those soils that are currently in a productive state, regardless of prime farmland classification. The Town of Holland productive agricultural lands are mapped in Figure 7-1. Lands included within the Brown County Farmland Preservation Plan are identified in Chapter 2 of this plan.

Regulations and Laws Affecting Livestock Facilities

Brown County administers an Animal Waste Management Ordinance. This ordinance regulates the installation and design of animal waste storage facilities and animal feedlots so as to protect the health and safety of residents and the environment. Permits must be received from Brown County for animal feedlots that exceed 500 animal units, for construction of any animal waste storage facility, or for any animal feedlot that has received a notice of discharge under Wisconsin statutes. Animal waste facility and animal feedlot plans need to provide provisions for adequate drainage and control of runoff to prevent pollution of surface water and groundwater. Permits for the abovementioned uses require separation and setbacks from adjacent properties, from lakes and streams, and vertical separation from groundwater. The ordinance prohibits the overflow of manure storage facilities, unconfined manure stacking adjacent to water bodies, direct runoff to water bodies, and prohibits unlimited livestock access to waters of the state where high concentrations of animals prevent adequate sod cover.



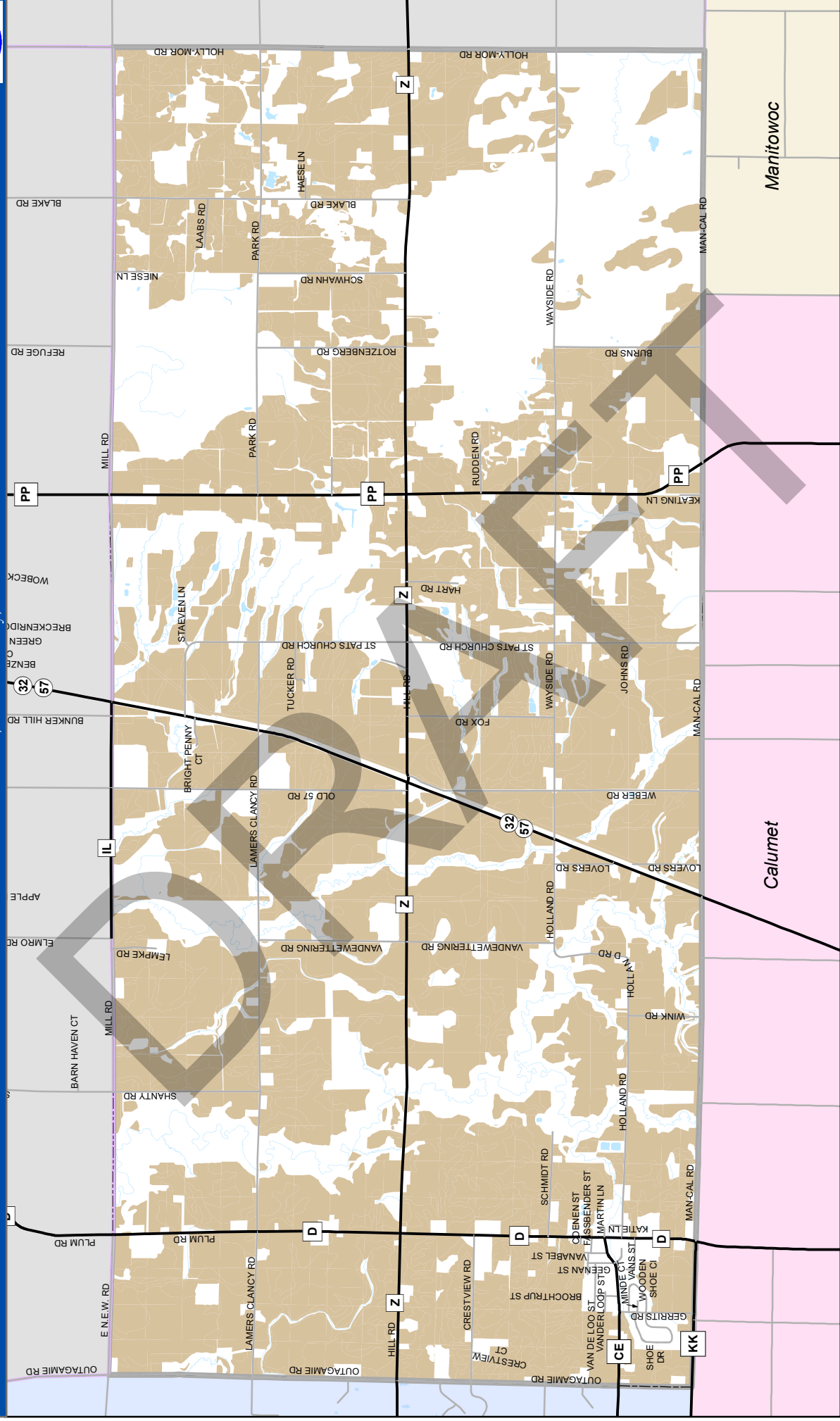
The State of Wisconsin through the Wisconsin Department of Natural Resources (DNR) regulates manure management for all farms that have 1,000 or more animal units. A concentrated animal feeding operations (CAFO) permit must be received from the DNR for farms exceeding 1,000 animal units. Once the permit is issued, the farm operators must comply with the terms of the permit by following approved construction specifications and manure spreading plans, conducting a monitoring and inspection program, and providing annual reports. The purpose of the implementation of the permit requirements is to ensure that no discharge of pollutants to navigable waters or groundwater occurs. Operators must



Prime Agricultural Soils

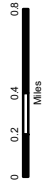
Town of Holland, Brown County, Wisconsin

Figure 7-1



Legend

- Neighboring Brown County Community
- Town of Holland
- Calumet
- Manitowoc
- Outagamie
- Highway (Federal, State, or County)
- Local Road or Street
- Lakes, Ponds & Rivers
- Rivers & Streams
- PrimeAgSoils



Source: Brown County Planning Commission, 8/21/2017

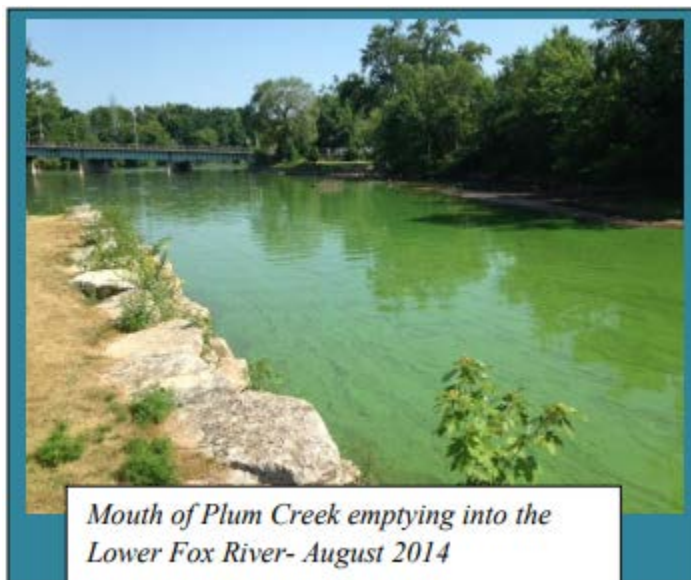
also submit an application for permit renewal every five years and notify the DNR of any proposed construction or management changes. In all of Brown County there are a total of 20 CAFOs, which is the highest number in the State. The nearby counties of Manitowoc and Kewaunee are ranked 2nd and 3rd in the state with 19 and 14 CAFOs, respectively¹.

The State of Wisconsin enacted the Livestock Facility Siting Law (93.90 Wis. Stats.) and administrative rule (ATCP 51) to establish state standards and procedures local governments must use if they choose to require conditional use or other permits for siting new and expanded livestock operations. The statute limits the exclusion of livestock facilities from agricultural zoning districts. ATCP 51 is administered by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) and identifies best management practices and siting criteria for the siting of livestock facilities that exceed 500 animal units or exceed a conditional use permit level set by the local unit of government prior to July 19, 2003, within areas zoned agricultural. In order for local units of government to regulate the siting of livestock operations within agricultural zones, the local unit of government is required to adopt the state standards in ATCP 51. Any application for a new livestock operation or expansion of an existing facility must be approved if the site meets the state standards. The local unit of government may deny a permit only if the site is located in a zoning district that is not zoned agricultural. Furthermore, a local unit of government may only apply more stringent requirements than state standards if it bases the requirements on scientific findings that show a more stringent requirement is needed to protect public health and safety.

Surface Water

Within the State of Wisconsin, waterways are generally governed as a component of the State's Public Trust Doctrine, as described in Article IX Section 1 of the Wisconsin Constitution and interpreted over time by Wisconsin courts and the state Attorney General's office. According to the Wisconsin Department of Natural Resources (WDNR), the public trust doctrine declares that all navigable waters are "common highways and forever free", and are held in trust by the WDNR for the public². As a result of subsequent citizen action and court decisions, the public interest, once primarily interpreted to protect public rights to transportation on navigable waters, has been broadened to include protected public rights to water quality and quantity, recreational activities, and scenic beauty³.

Wisconsin's Public Trust Doctrine requires the state to intervene to protect public rights in the commercial or recreational use of navigable waters. The WDNR, as the state agent charged with this responsibility, can do so through permitting requirements for water projects, through court action to stop nuisances in navigable waters, and through administrative rules guiding local zoning ordinances that limit development along navigable waterways.⁴ The court has ruled WDNR staff, when they review projects that



¹ http://dnr.wi.gov/topic/AgBusiness/data/CAFO/cafo_sum.asp

² <http://dnr.wi.gov/waterways/shoreland/doctrine.htm>

³ Quick, John. 1994. *The Public Trust Doctrine in Wisconsin*. *Wisconsin Environmental Law Journal*, Vol. 1, No. 1.

⁴ <http://dnr.wi.gov/waterways/shoreland/doctrine.htm>

could impact Wisconsin lakes and rivers, must consider the cumulative impacts of individual projects in their decisions. In the 1966 Wisconsin Supreme Court Case, *Hixon v. PSC*, the justices wrote in their opinion the following: *"A little fill here and there may seem to be nothing to become excited about. But one fill, though comparatively inconsequential, may lead to another, and another, and before long a great body may be eaten away until it may no longer exist. Our navigable waters are a precious natural heritage, once gone, they disappear forever."*⁵

Surface water is one of the most important natural resources available in a community. Surface waters provide drainage after heavy rains, provide habitat for plants, fish, and animals, and can be a source of drinking water and a source of process water for industry and agriculture. Lands adjacent to surface water have an abundance of cultural and archeological significance because they were often the location of Native American and early European settlements.

There are many miles of perennial streams in the Town of Holland. Streams have many scenic and recreational values. Some ephemeral (intermittent) waterways and wetlands do not always show up on maps and are more difficult to protect by state and federal statutes. Ephemeral waterways provide sites for infiltration of surface water into groundwater reservoirs and provide habitat for plants and animals. Small intermittent waterways and wetlands are where most nutrients and contaminants are filtered from surface waters.

Water that sheet flows across the land surface after a rainfall, is considered a surface water resource. As water flows across the surface of the land, nutrients and contaminants are picked up and dissolved substances are carried into larger surface water bodies and into groundwater.

Federal, state, and local laws and regulations have been created to protect surface water, ranging from the commerce clause of the United States Constitution to stormwater management requirements, and county floodplain or shoreland zoning regulations. The most heavily regulated waters are determined to be natural and "navigable." Ephemeral waterways not considered navigable and ephemeral wetlands are generally not protected by state and federal statutes and need protection at a more local level.

As shown in Figure 7-2, the primary surface water features in the Town of Holland include Plum Creek, the East River, and a large complex of wetlands east of CTH PP and south of CTH Z. In addition, the Town of Holland also has a number of small unnamed tributaries to these rivers and wetland areas that are also considered surface water resources. The protection and preservation of surface waters should be one of its highest natural resources priorities. This action is important for all surface waters which drain either to the Fox River and Bay of Green Bay or directly to Lake Michigan.



The Town of Holland and its agricultural community should continue to work with the Brown County Land and Water Conservation Department to install grassed buffer strips to filter suspended solids and nutrients from entering the Town's surface waters. Additionally, the Town's agricultural producers should also continue to work with qualified agronomists and the Brown County Land and Water Conservation Department to ensure nutrient management plans are up to date.

⁵ Quick, John. 1994. The Public Trust Doctrine in Wisconsin. *Wisconsin Environmental Law Journal*, Vol. 1, No. 1.

Plum Creek and Unnamed Tributaries

Plum Creek and its unnamed tributaries flow out of the southwest side of the Town of Holland. Most tributaries are navigable and eventually empty into the Fox River and the Bay of Green Bay.

East River and Unnamed Tributaries

The East river one of the main surface water features in Brown County and the Town of Holland. It flows out of the southwest side of the Town of Holland. Most tributaries are navigable and eventually empty into the Fox River and the Bay of Green Bay.

Other Small Waterways

There are additional small intermittent and perennial streams within the Town of Holland. These waterways provide important habitat for many other plants and animals.

Watersheds

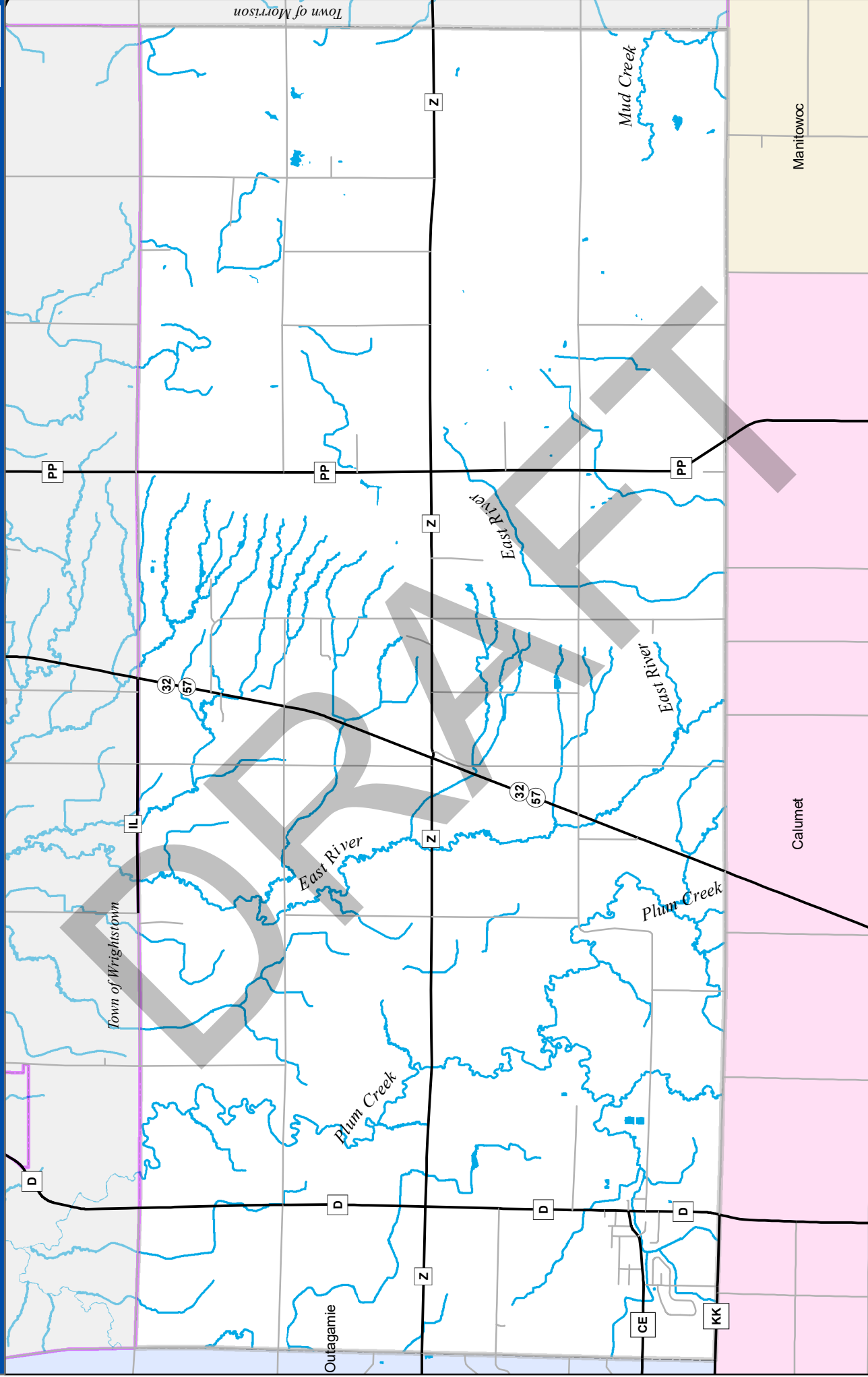
A watershed is an area of land where all the water on it and under it drains to the same place. Within this area of land, all living things are linked by the common waterway. Six watersheds drain the Town of Holland to the Bay of Green Bay: two unnamed tributaries of Plum Creek, two Plum Creek, the East River, and an unnamed tributary of the East River. Three other watersheds drain the far eastern part of the Town to Lake Michigan including the Mud Creek, Branch River, and an unnamed tributary of the Branch River.



Surface Water

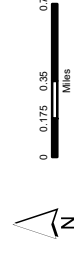
Town of Holland, Brown County, Wisconsin

Figure 7-2



Legend

- Highway (Federal, State, or County)
- Local Road or Street
- Surrounding Communities
- Town of Holland
- Lakes, Ponds & Rivers
- Rivers & Streams
- Calumet County
- Manitowoc County
- Outagamie County



Source: Brown County Planning Commission, 10/24/2017

Floodplains

Floodplains are natural extensions of waterways. All surface waters possess them; although, the size of the floodplain can vary greatly. They store floodwaters, reduce flood peaks and velocities, and reduce sedimentation. They also provide vital wildlife habitat and serve as filters for sediments and pollution. Like surface waters, the importance of floodplains is also recognized and is regulated by federal, state, and county governments. The State of Wisconsin mandates floodplain zoning for all communities under Wisconsin Administrative Code NR 116. These minimum standards must be implemented in order to meet eligibility requirements for federal flood insurance programs.

Within Brown County, floodplains in the unincorporated parts of the County, including the Town of Holland, are regulated under Chapter 23, Floodplains Ordinance for Brown County, Wisconsin. Whenever development is proposed near a stream, river, lake, or pond, it is the property owner's responsibility to ensure the proposed development is in compliance with local, county, and state requirements and that the appropriate permits are obtained prior to beginning construction. The Town of Holland does have some mapped floodplain associated with the East River and Plum Creek. While there are only a few waterways that have mapped floodplain it is important to remember that all waterways, no matter how small, have floodplains during heavy rain or snow melt events. Therefore, if development is to occur in proximity to a waterway, a detailed flood study should be prepared to define the floodway, flood fringe, and building elevations. Furthermore, as culverts are replaced in the Town of Holland, it is critically important that the Brown County Zoning Office be consulted in order to ensure the proper permits are obtained and culvert sizes are adequate. Figure 7-3 depicts the floodplains adjacent to the Town of Holland.

The following are several threats to floodplains and the resource values that they represent:

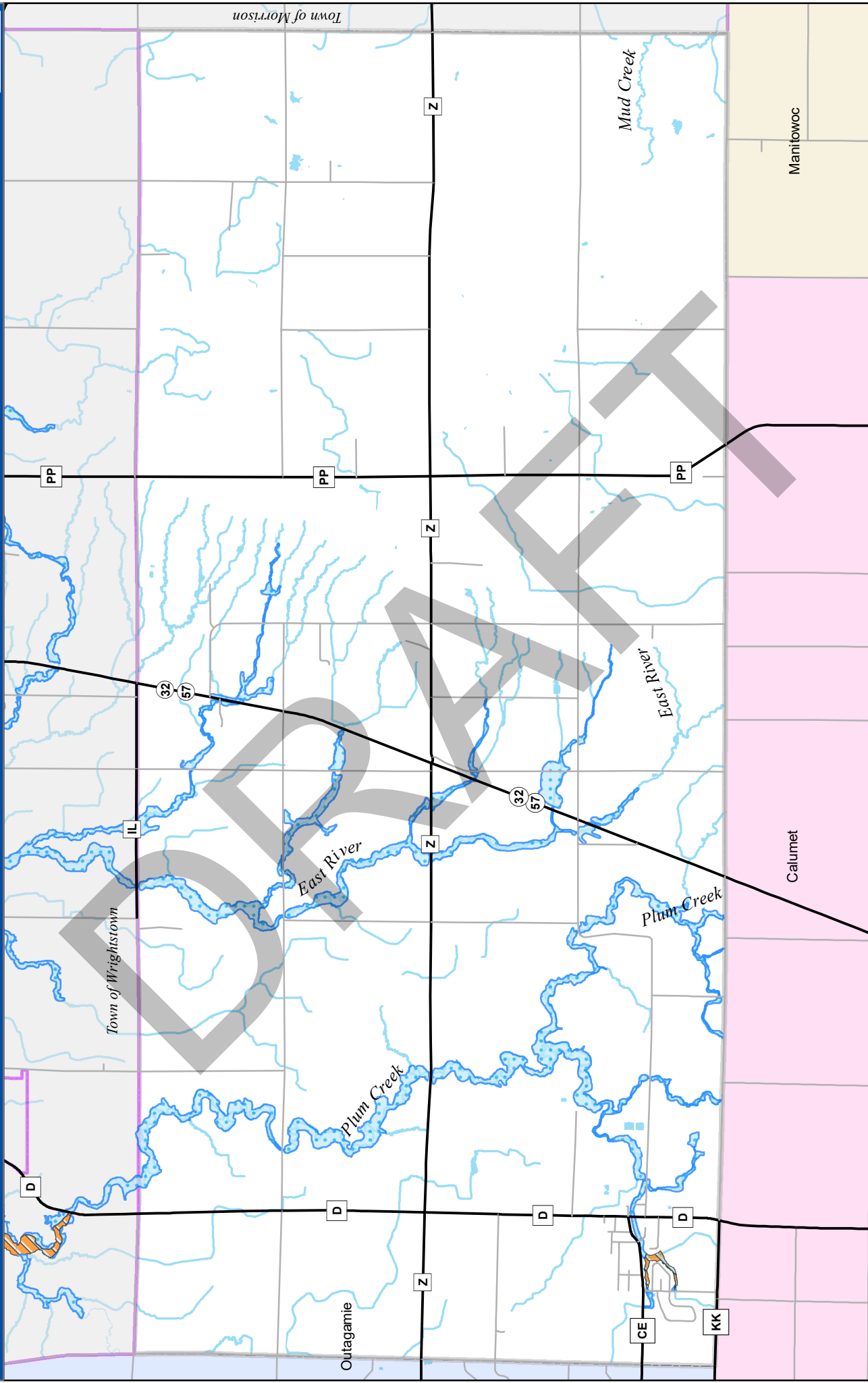
- **Filling**, which diminishes the flood storage capacity of the floodplain. This could have the effect of increasing the elevation or velocity of floodwaters to the detriment of upstream or downstream properties.
- **Grading**, which can degrade the resource functions of floodplains, such as filtering pollutants or providing habitat.
- **Impediments**, which include the encroachment of buildings or the construction of undersized culverts and bridge openings in the floodplain and which can adversely affect the size and proper functioning of the floodplain and may pose potential hazards to adjacent residents and passersby.
- **Impervious surfaces**, which can increase the velocity of the flood flows, increase the amount of pollutants, reduce the amount of natural wildlife habitat, and limit the amount of infiltration of stormwater runoff into the ground.



Floodplains

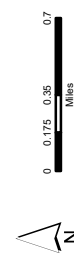
Town of Holland, Brown County, Wisconsin

Figure 7-3



Legend

- Highway (Federal, State, or County)
- Local Road or Street
- Surrounding Communities
- Town of Holland
- Calumet County
- Manitowoc County
- Outagamie County
- Lakes, Ponds & Rivers
- Rivers & Streams
- Floodplain, No Floodway Determined
- Floodway



Source: Brown County Planning Commission, 10/24/2017

Shorelands and Stream Corridors

Shorelands are the interface between land and water. In its natural condition, shorelands are comprised of thick and diverse vegetation that protect lakes, rivers, and streams. If these areas are developed, this vegetation is lost, and fish, wildlife, and water quality are damaged. Most of the streams in the Town of Holland are less defined and do not have the differing topography as do the streams in other parts of the county

Like floodlands, the importance of shorelands is recognized and is regulated by state and local governments. Shoreland zoning is primarily intended to control the intensity of development near and to create a buffer around lakes, rivers, and streams. The buffer is intended to remain an undeveloped strip of land that protects the water from the physical, chemical, hydrological, and visual impacts of nearby development. Wisconsin mandates shoreland zoning for all unincorporated communities and those parts of incorporated cities and villages that were annexed after May 7, 1982. The Town of Holland must follow the state mandated minimums listed under Wisconsin Administrative Code NR 115. Figure 7-5 presents a diagram of the state mandated minimum shoreland zoning requirements.

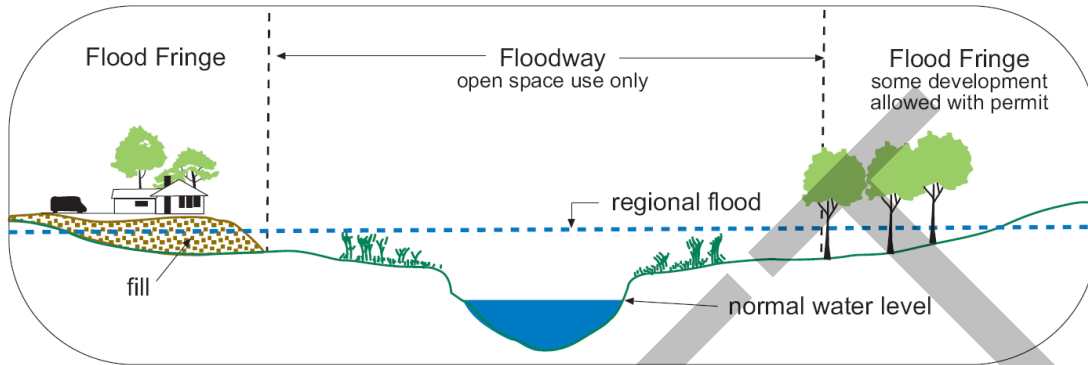
The shoreland restrictions do not apply to those waters that are determined to be non-navigable waters. However, all lakes, rivers, and streams, no matter how small, must be assumed to be navigable until determined otherwise by the DNR.

As shorelands are closely related to floodplains, so are the threats to the resource values shorelands represent. Under current regulatory requirements, the 75 feet closest to navigable waters are off limits to development, but development could occur within the remainder of the shoreland area with receipt of appropriate permits and approvals, and agricultural activities could continue within the shoreland area.

The Town of Holland should continue to encourage greater protection of the shoreland area. In this regard, the Town of Holland should take full advantage of federal, state, and county funding and other assistance in the establishment of vegetative stream buffers to further filter out sediments and other associated pollutants.

Figure 7-4

Floodlands and Floodplain Zoning



Definitions

Floodplain - That land which has been or may be covered by floodwater during the regional flood. The floodplain includes the floodway and flood fringe areas.

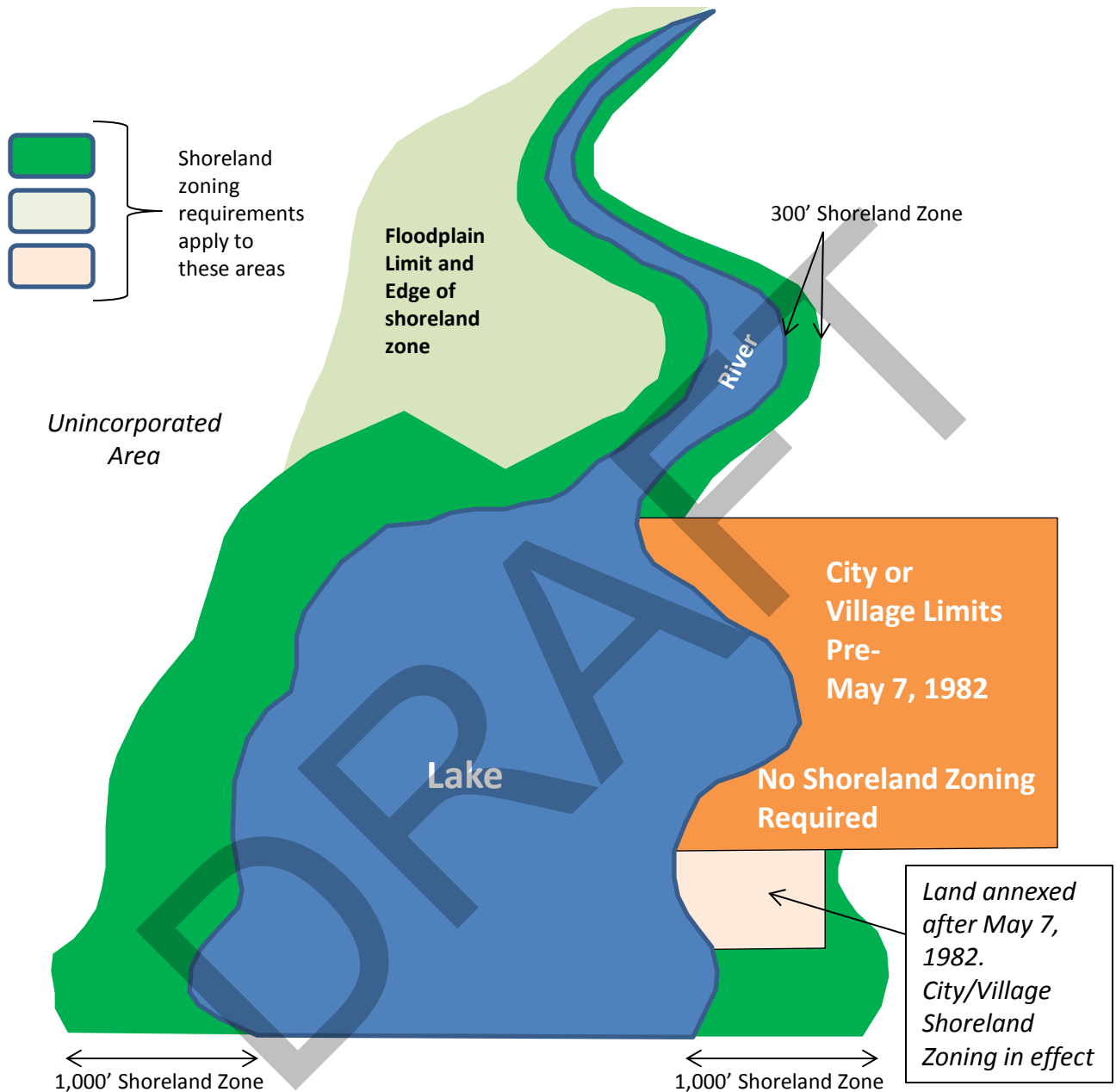
Floodway - The channel of a river or stream and those portions of the floodplain adjoining the channel required to carry the regional flood discharge. The floodway is the most dangerous of the floodplain. It is associated with moving water.

Flood Fringe - The portion of the floodplain outside of the floodway, which is covered by floodwater during the regional flood. It is associated with standing water rather than flowing water.

Regional Flood - That area where large floods are known to have occurred in Wisconsin, or which may be expected to occur, at a frequency of one percent during any given year. Also referred to as the 100-year floodplain or 100-year recurrence interval flood hazard area.

Source: Wisconsin Department of Natural Resources

Figure 7-5
Shoreland Zoning



Definitions

Shoreland Zone – The shoreland zone is located within 1,000 feet of the ordinary high water mark (OHWM) of a navigable lake, pond, or flowage, or within 300 feet of the OHWM of a navigable stream or river or to the landward side of the floodplain, whichever distance is greater.

Ordinary High Water Mark – The ordinary high water mark is the boundary between upland and lake or riverbed. It is the point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark by erosion, destruction of terrestrial vegetation, or other easily recognized characteristics.

Navigable – Generally a waterway is navigable if it has a bed and banks and can float a canoe at some time each year – even if only during spring floods. Even small intermittent streams that are seasonally dry may meet the test of navigability. Navigable lakes and streams are public waterways protected by law for all citizens.

Unincorporated Areas – Lands lying outside of incorporated cities or villages.

Wetlands

Wetlands are characterized by water at or near the ground level, by soils exhibiting physical or chemical characteristics of waterlogging, or by the presence of wetland-adapted vegetation. Wetlands are significant natural resources that have several important functions. Wetlands enhance water quality by absorbing excess nutrients within the roots, stems, and leaves of plants and by slowing the flow of water to let suspended pollutants settle out. Wetlands help regulate storm runoff, which minimizes floods and periods of low flow. Wetlands also provide essential habitat for many types of wildlife and offer recreational, educational, and aesthetic opportunities to the community.



There are two broad classifications of wetlands: perennial wetlands and ephemeral (intermittent) wetlands. Perennial wetlands are inundated with water for much of the year and develop classic wetland characteristics, such as soil mottling. Perennial wetlands usually support populations of water loving plants. Ephemeral wetlands, which are sometimes called intermittent wetlands due to soil type and topography, often do not develop classic wetland characteristics since they are flooded only part of the year. Both types of wetlands are equally important.

The Wisconsin Wetlands Inventory map identifies wetlands scattered throughout the Town of Holland. As shown on Figure 7-6, the WDNR digital wetlands inventory identified approximately 2,933 acres of wetlands within the Town of Holland.

Under current regulatory requirements, all wetlands are off-limits to development unless appropriate permits and approvals are obtained. In the unincorporated parts of Brown County, including the Town of Holland, wetlands within the shoreland zone of navigable waterways, as identified on the Wisconsin Wetland Inventory maps are zoned by Brown County through the Brown County Shorelands and Wetlands Ordinance (Chapter 22 of the Brown County Code of Ordinances). Wetlands within this zone are generally unavailable for development unless a wetlands zoning map amendment is reviewed and approved by Brown County and the State of Wisconsin Department of Natural Resources. In order to have a viable case for a rezoning, a property owner would need to hire a certified wetland delineator to identify the wetland boundaries and then document that the proposed development activity would not take place within the field-delineated wetland.

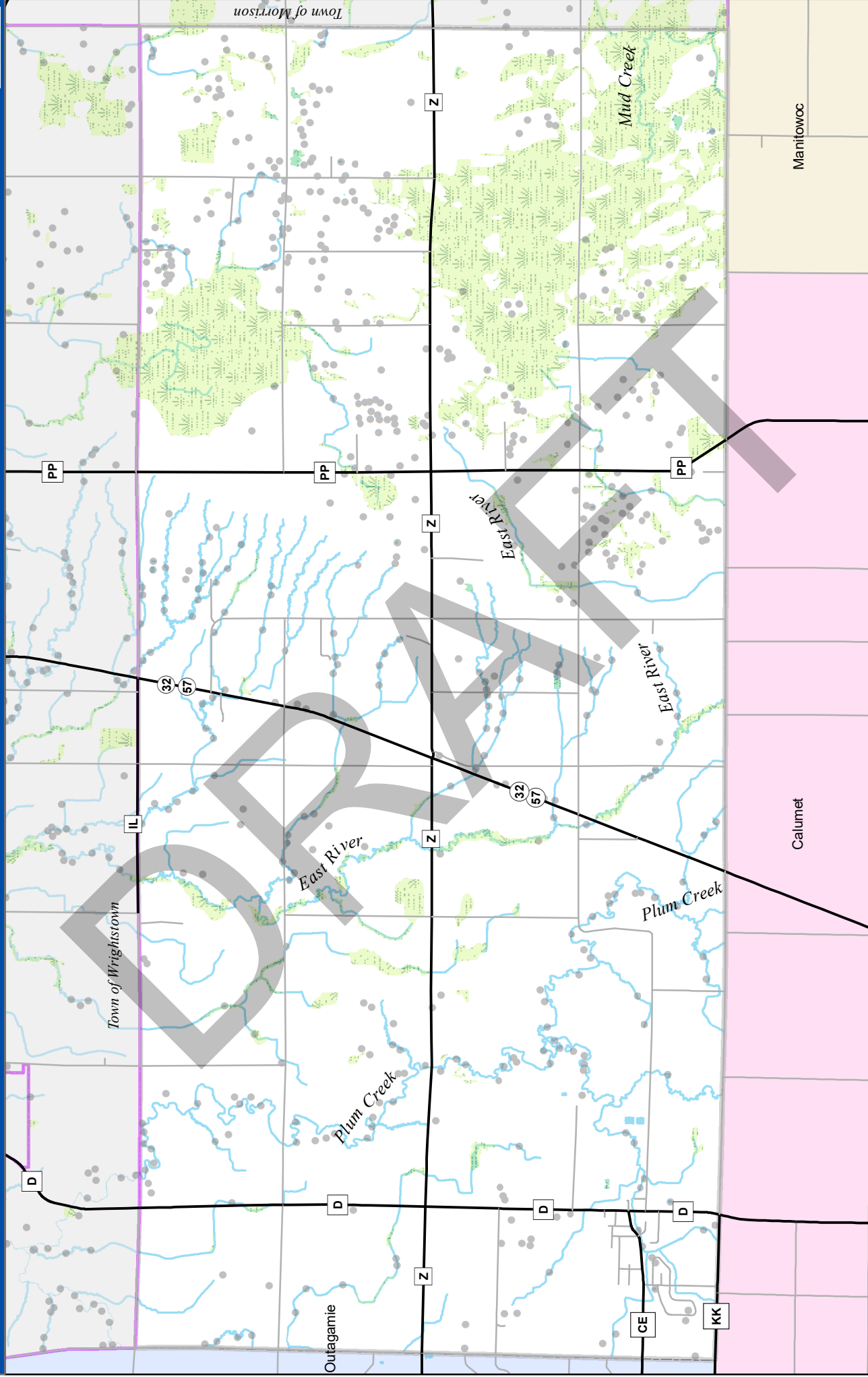
Wetlands are also regulated through the Brown County Land Division and Subdivision Ordinance (Chapter 21) of the Brown County Code. Chapter 21 regulates wetlands as part of the land division process, and generally requires wetland delineations be performed as part of the county review process. In addition to the wetland itself, Chapter 21 requires a 35' environmentally sensitive area (ESA) setback from wetlands two acres or larger to ensure the ecological functions of the wetland remain intact. Within the wetland ESA setback, no filling, cutting, grading, or development may occur, unless approved by Brown County, and potentially the Wisconsin Department of Natural Resources. The wetland and ESA setbacks are identified on the recorded land division map to make future owners of the parcel aware of the building limitations on the site. In addition to the Brown County requirements, potential developers and landowners should be aware that the Wisconsin Department of Natural Resources and U.S. Army Corps of Engineers also regulate activity in wetlands.



Wetlands

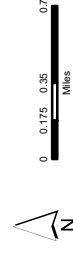
Town of Holland, Brown County, Wisconsin

Figure 7-6



Legend

- Highway (Federal, State, or County)
- Local Road or Street
- Surrounding Communities
- Town of Holland
- Calumet County
- Manitowoc County
- Outagamie County
- Lakes, Ponds & Rivers
- Rivers & Streams
- WDNR Wetlands < 2 acres
- WDNR Wetlands > 2 acres



Source: Brown County Planning Commission, 10/24/2017

The primary threat to wetlands is filling. Although an array of federal, state, and local regulations help protect them, wetlands (especially smaller ones) are still lost to road construction and other development activities. The draining of wetlands may also occur through tilling and rerouting of surface water. Even if wetlands are not directly filled, drained, or developed, they still can be impacted by adjacent uses. Siltation from erosion or pollutants entering via stormwater runoff can destroy the wetland. Previously healthy and diverse wetlands can be severely degraded to the point at which only the hardiest plants like cattails can survive. Invasive plant species, such as phragmites and purple loosestrife also have a significant negative effect on wetlands by overrunning the native wetlands species and creating monocultures of unproductive wetland habitat.

Environmentally Sensitive Areas

Environmentally sensitive areas (ESAs) are defined by the Brown County Planning Commission as portions of the landscape consisting of valuable natural resource features that should be protected from intensive development. They include all lakes, rivers, streams, wetlands, floodways, and other locally-designated significant and unique natural resource features. ESAs also include a setback or buffer from these features. In addition, they include areas of steep slopes (slopes 20 percent or greater) when located within or adjacent to any of the features previously noted. See Figure 7-7 for the locations of the Town of Holland ESAs.

Research and experience from throughout Wisconsin indicate that the potential exists for significant adverse water quality impacts if ESAs are developed. Identification and protection of ESAs are required by both state and county regulations under Wisconsin Administrative Code NR 121 and the Brown County Sewage Plan, prepared by the Brown County Planning Commission, as well as the Brown County Subdivision Ordinance. ESA protection is enforced during the review and approval of all land divisions and/or public sanitary sewer extensions. The intent of enforcing protection of ESAs is to protect water-related natural resource features from the adverse impacts often associated with development.

In general, development and associated filling, excavation, grading, and clearing are prohibited within ESAs. However, certain non-intensive uses, such as public utilities and public recreation, are often allowed within these areas. In conjunction with erosion control and stormwater management practices, protection of the ESAs can provide numerous benefits, including:

- Recharge of groundwater.
- Maintenance of surface water and groundwater quality.
- Attenuation of flood flows and stages.
- Maintenance of base flows of streams and watercourses.
- Reduction of soil erosion.
- Abatement of air pollution.
- Abatement of noise pollution.
- Favorable modification of micro-climates.
- Facilitation of the movement of wildlife and provision of game and non-game wildlife habitat.
- Facilitation of the dispersal of plant seeds.
- Protection of plant and animal diversity.
- Protection of rare, threatened, and endangered species.

Threats to ESAs are similar to those of floodplains and shorelands. In addition, the quality and effectiveness of ESAs can be severely reduced should adjacent development change drainage patterns or remove native vegetation from the lands within or immediately adjacent to the ESAs. Such disturbances can also introduce invasive plant species to the ESAs, which can result in loss of native vegetation, diversity, and habitat.

The protection of environmentally sensitive areas (ESAs) keep intensive development out of stream corridors, water quality is improved, wildlife habitat is maintained, recreational opportunities are presented, and scenic values are preserved. As discussed in the environmentally sensitive area section of this chapter, ESAs generally follow stream corridors and include a 75' setback, the identified floodway of the stream and any adjacent wetlands and steep slopes. ESAs remain mostly undeveloped and serve as vital wildlife corridors, preserve natural beauty, provide storm water management areas, and link ecologically important link parts of the Town together.

In addition to regulation of ESAs by Brown County, components of ESAs, including floodways/floodplains, wetlands, and navigable waterways are regulated by various other governmental agencies, including the Wisconsin Department of Natural Resources, Federal Emergency Management Agency (FEMA), and U.S. Army Corps of Engineers. In order to assist local municipalities with protection of ESAs and to coordinate efforts among the agencies, Brown County produced large-scale Shoreland Zone / ESA maps for each Brown County community, including the Town of Holland through a Wisconsin Coastal Management Grant in 2012. These maps are available online and should be utilized by the Town's zoning administrator and building inspector to assist in making determinations as to whether a proposed development could impact an ESA or require a shoreland zone permit from the Brown County Zoning Office. The maps are located on the Brown County Zoning Office website under the "Shorelands, Wetlands, and Floodplains" link.

It is recommended that the Town of Holland continue to work proactively with the Brown County Planning Commission to identify and educate residents on the importance of ESAs.

Groundwater

As shown in Figure 7-8, groundwater begins as precipitation (rain or snow) that falls upon the land. Some precipitation runs off into lakes, rivers, streams or wetlands. Some evaporates back into the atmosphere, and some is absorbed by plants. Groundwater is precipitation that soaks into the ground past plant roots and down into the subsurface soil and rock. A layer of soil or rock that is capable of storing groundwater and yielding it to wells is called an aquifer. There can be a number of aquifers within an area, one above another. The top of the aquifer closest to the ground's surface is called the water table. It is the area below which all the openings between soil and rock particles are saturated with water. Like surface water, groundwater moves from high areas to low areas. It discharges at places where the water table intersects the land's surface, such as lakes, streams, and wetlands, providing a base flow for water features.

Groundwater is the source of drinking water for Town of Holland residents that have private wells. As with all communities, it is very important that groundwater is protected. The greatest threats to groundwater are contamination and overuse. As with any rural community, the most common sources of contamination include feedlots, manure storage and spreading, manure pits, irrigation, fertilizers, and pesticides. The Town of Holland has a high number of private wells and continued private well development may eventually have a negative impact on groundwater quantity and quality.

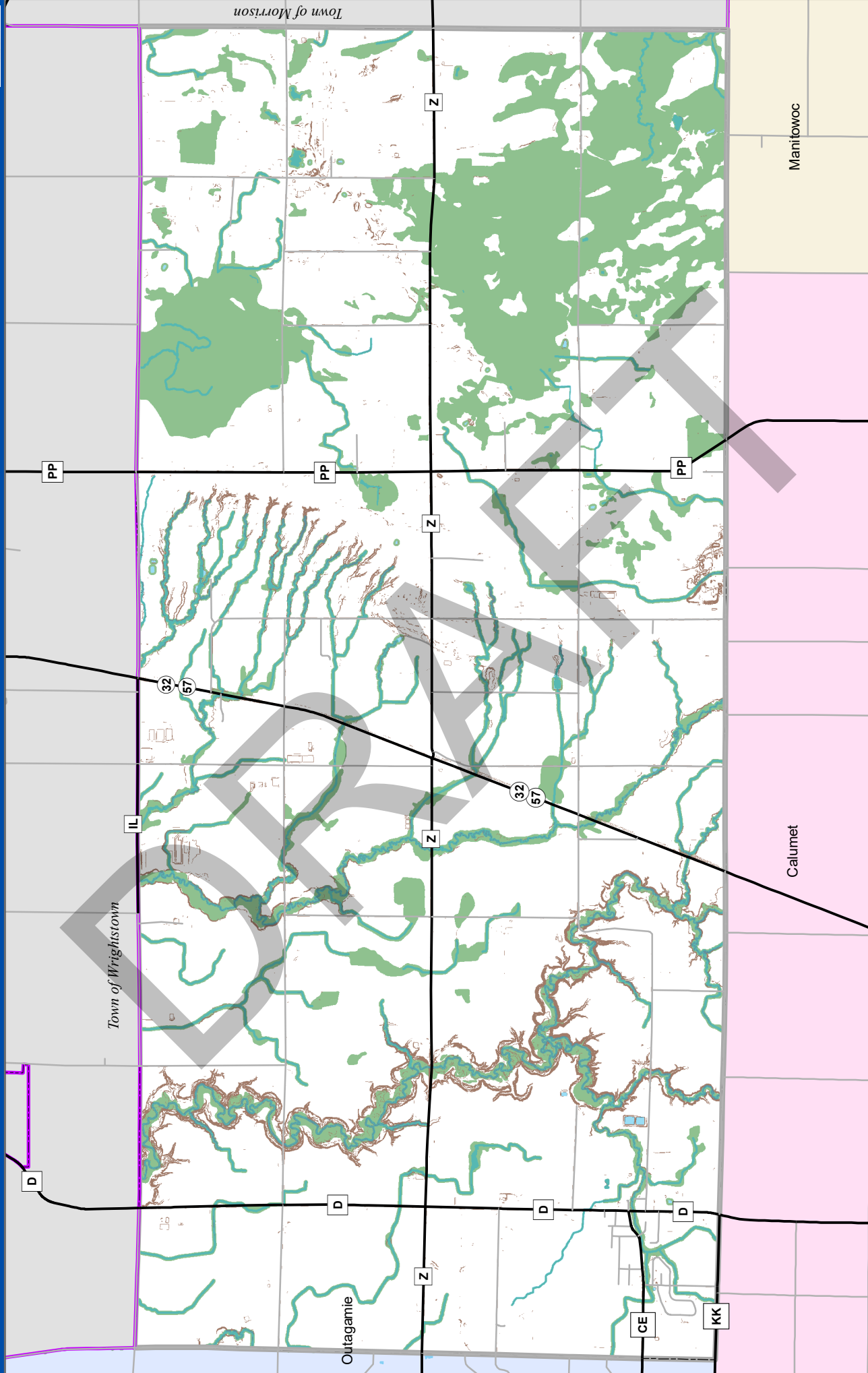
The Town of Holland should ensure that old wells are properly sealed to prevent surface water contaminants from reaching groundwater. The Town should continue to monitor the quantity and quality of groundwater available for the Town. In order to ensure a safe supply of private drinking water, the Town should continue a well-testing program to identify contaminants that may be present, such as bacteria, nitrates, pesticides, etc. The Town should provide homeowners with information regarding proper maintenance and testing of private wells, including the educational brochure from the WDNR entitled "You and Your Well," and the water supply information on the Town website. The Town of Holland should also continue to support Brown County's "time of sale" program of inspecting private onsite wastewater treatment systems to guard against failing systems, ensuring functioning septic systems will continue to serve as a protection against groundwater contamination.



Environmentally Sensitive Areas

Town of Holland, Brown County, Wisconsin

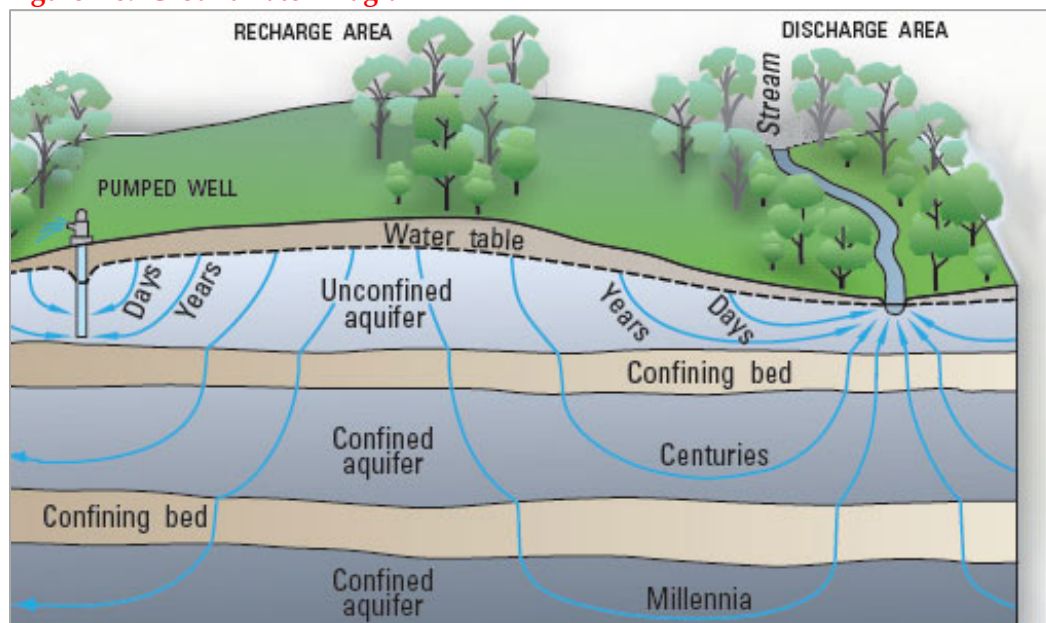
Figure 7-7



Legend

- Highway (Federal, State, or County)
 - Local Road or Street
 - Surrounding Communities
 - Town of Holland
 - Calumet County
 - Manitowoc County
 - Outagamie County
 - Lakes, Ponds & Rivers
 - Rivers & Streams
 - Slopes > 20%
 - Environmentally Sensitive Area
- 0 0.175 0.35 0.7 Miles
- Source: Brown County Planning Commission, 6/24/2018

Figure 7-8: Groundwater Diagram



Source: United States Geological Survey

Although maintaining groundwater quality will continue to be a concern, quantity may become less of an issue because many suburban communities in Brown County stopped drawing groundwater after receiving potable water from Lake Michigan. The Wisconsin Department of Natural Resources recommends testing private wells for coliform bacteria at least once a year or immediately any time there is a change in how the water looks, tastes, or smells. Even if the groundwater looks, tastes, and smells fine, there is a chance it may have harmful bacteria or viruses. The Town of Holland should provide residents with information annually related to private well maintenance and testing, such as in the WDNR document "You and Your Well" which can be found on the WDNR website under the "Groundwater" link. Additional information related to groundwater specific to Holland may be found in the Community Facilities and Utilities Chapter.

Woodlands

Although agricultural uses dominate the landscape in the Town of Holland, there are also a number of scattered areas of small woodlots. The vegetative state of the 5,140 acres of woodlands in the Town of Holland varies considerably, however, most are either isolated pockets associated with low or wetland areas or with other environmental features such as waterways or ravines.

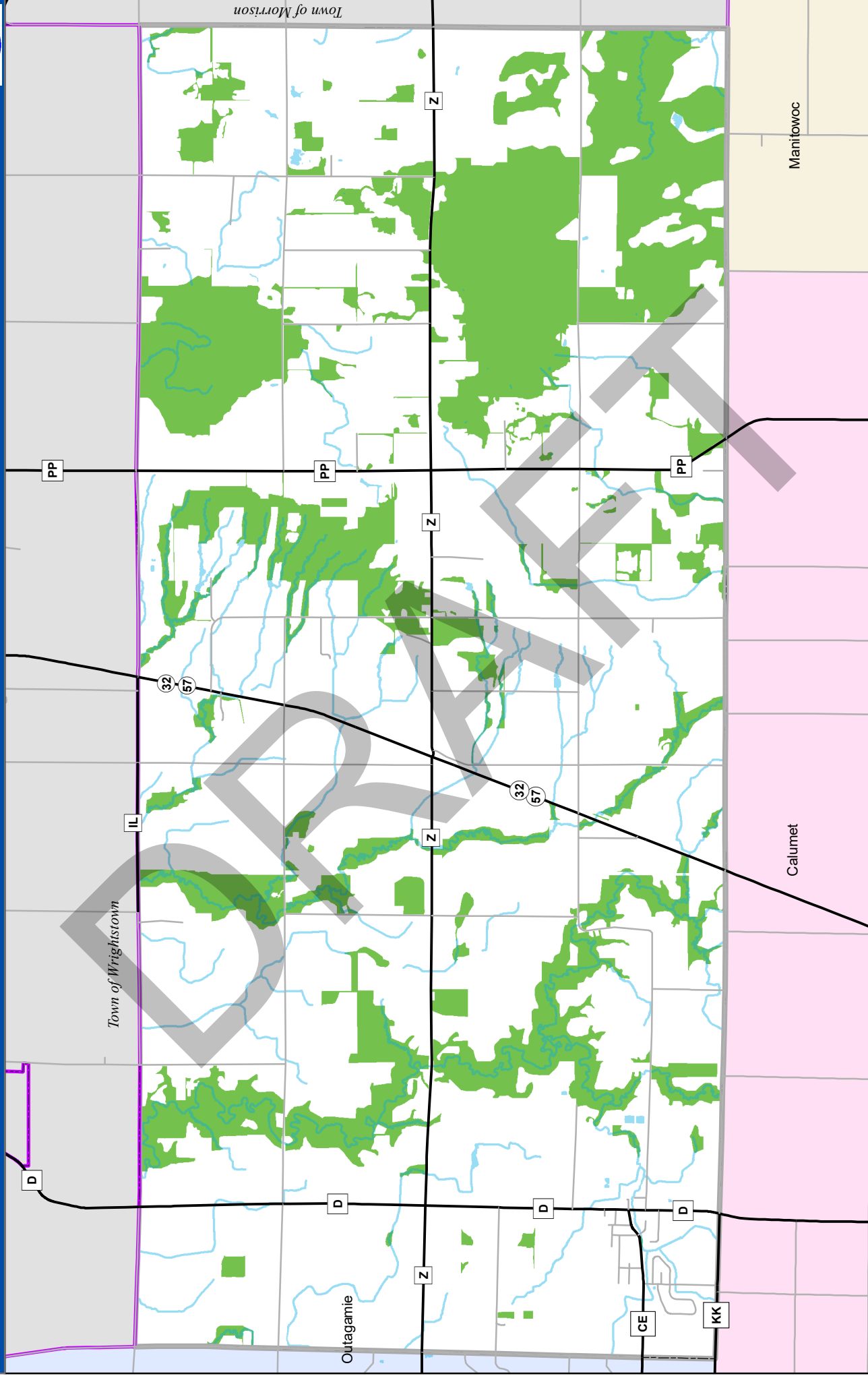
The largest contiguous areas of woodlands in the Town of Holland are located along Plum Creek and its tributaries, the East River, the Holland Public Hunting Grounds, and the large wetland complex south of CTH Z and east of CTH PP. The wooded areas in the Town of Holland have largely been fragmented by agricultural uses, as depicted in Figure 7-9.

Since wooded areas are often utilized as settings for residential subdivisions, and generally do not directly disrupt agricultural activity, they are often logical sites for residential development. Intensive residential development, especially if improperly planned, can disrupt the scenic and natural values of the woodland resource and can fragment the blocks and corridors necessary to provide refuge and passage for wildlife. Loss of these woodlands may also degrade the rural character and views of the Town.

Figure 7-9

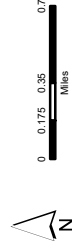
Woodlands

Town of Holland, Brown County, Wisconsin



Legend

- Highway (Federal, State, or County)
- Local Road or Street
- Surrounding Communities
- Town of Holland
- Calumet County
- Manitowoc County
- Outagamie County
- Lakes, Ponds & Rivers
- Rivers & Streams
- Woodlands



Source: Brown County Planning Commission, 6/24/2018

Other threats to Holland's woodlands include improper management (such as the over harvesting or under harvesting of trees), haphazard utility and road construction and maintenance, and the introduction of exotic species and disease. However, considering one of the primary goals of the Town is to promote agricultural activities, locating residential development within woodlots would not directly negatively impact farming. If residential development is going to occur in a wooded area it should be done in a manner which preserves as large a contiguous block of the woodlands as possible.

Wildlife Habitat

Most of the land in the Town of Holland is actively being farmed. Some of the better wildlife habitat is contained in the woodlands, wetland, and along waterways and drainage corridors. Large tracts of woodlands or wetland-type vegetation offer areas for wildlife movement. However, these areas are still affected around their edges by regional issues, such as water quality, and by potential invasion of exotic species. Typical wild game birds and mammals found in the Town of Holland include ducks, geese, woodcock, pheasant, Hungarian partridge, ruffed grouse, cottontail rabbit, fox and gray squirrel, muskrat, mink, raccoon, skunk, opossum, woodchuck, red fox, and whitetail deer.

In addition to water feature based linear corridors, fencerows along the boundaries of agricultural fields provides critical habitat for pheasant, whitetail deer, small mammals, raptors, and songbirds. As agricultural practices increase in scale, many smaller farm fields are being combined into much larger fields to accommodate the increased size of agricultural equipment and efficiencies associated with modern agricultural practices, which is reducing the amount of fencerow habitat.

Preservation of wildlife habitat is another benefit from protecting surface waters, floodplains, shorelands, wetlands, and woodlands. It is assumed for purposes of this report that should these areas be adequately protected and preserved, so would its wildlife habitat functions.

Threatened and Endangered Species

An endangered species is one with continued existence that is in jeopardy and may become extinct. A threatened species is one that is likely, within the foreseeable future, to become endangered. The Bureau of Endangered Resources within the Wisconsin Department of Natural Resources monitors endangered and threatened species and maintains the state's Natural Heritage Inventory (NHI). This program maintains data on the locations and status of rare species in Wisconsin. According to the NHI, there are no endangered or threatened species found or potentially found in the Town of Holland.

The primary threats to threatened and endangered species typically are the loss of wetlands and other habitats due to development and other factors. Federal and state regulations discourage and sometimes prohibit development where such species are located. This is also another reason why it is very important to protect and preserve the Town of Holland surface waters, floodplains, shorelands, wetlands, and woodlands.

Scenic Resources and Topography

The Town of Holland topography ranges from almost flat on the east half of town, to gently rolling along the East River and Plum Creek. The Town of Holland elevation ranges from 626 feet in the northeast areas of the Town, near Plum Creek and the Fox River, up to 1020 feet in the areas east of CTH PP. The resulting difference in elevation is 394 feet. The relative lack of variability in topography in some areas of the Town sometimes results in problems with draining stormwater away from development.

The wooded areas along Plum Creek the East River, the Holland Public Hunting Grounds, and areas near the wetlands in southeast Holland provide the most picturesque views due to the natural features such as ravines and natural vegetation as well as wildlife activity. It should be noted that despite the beauty of these features, steeper slopes and terrain changes may increase erosion due to the velocity that storm water drains.

As with floodlands, shorelands, wetlands, and woodlands, scenic areas should also be considered for protection where appropriate under conservancy zoning and/or conservation by design subdivision techniques.

Mineral Resources

Nonmetallic mining is a widespread activity in Wisconsin, as well as in Brown County. In Wisconsin, there are an estimated 2,000 quarries that provide aggregate for construction, sand, gravel, and crushed stone for road building, and limestone for agricultural lime applications. In Brown County, quarrying activity is concentrated along the Niagara escarpment along the boundaries of Ledgeview, Rockland, and Holland.

The State of Wisconsin first passed a nonmetallic mining law in 1994. The law requires that all nonmetallic mining operations be registered. To be registered, the nonmetallic mineral deposit must be delineated by a professional geologist or registered engineer and certified to be economically viable. Second, if the land is zoned, the existing zoning at the time of registration must allow mining as a permitted use or as a conditional use. The state law further specifies that the registration lasts for ten years and can be renewed for an additional ten years. However, after 20 years, the full registration process must be undertaken once again. In addition, the law states that local zoning officials can deny the mining only if they can prove that the mineral deposit is not marketable or that the zoning at the time of the registration prohibited mining.

Wisconsin passed a second nonmetallic mining law in 2000: Wisconsin State Statute Section 295.13(1) and Wisconsin Administrative Code NR 135. The state statute and administrative code require that all counties in the state adopt an ordinance in 2001 (consistent with the model ordinance prepared by the Wisconsin Department of Natural Resources) to establish a reclamation program capable of ensuring compliance with uniform state reclamation standards. The administrative code also allows cities, villages, and towns to adopt such an ordinance and administer the program within their own jurisdiction at any time. The administrative code states that the county ordinance applies to every city, village, or town within the county until the city, village, or town adopts and administers the ordinance.

Brown County adopted its Nonmetallic Mining Reclamation Ordinance in 2001. Most communities in Brown County, including the Town of Holland, opted to have Brown County adopt and enforce the reclamation ordinance for their respective municipalities.

Wisconsin's nonmetallic mining reclamation program requires that nonmetallic mining operators prepare a reclamation plan to state standards. These standards deal with topsoil salvage and storage, surface and groundwater protection, reclamation during mining to minimize the amount of land exposed to wind and water erosion, re-vegetation, site grading, erosion control, and a final land use consistent with local zoning requirements.

There is one active quarry within the Town of Holland in the southcentral part of the Town. Because of the presence of this high quality mineral resource in the Town of Holland and because of the potential for both significant positive economic impacts and negative environmental and land use impacts, relevant Town ordinances should be continually reviewed to ensure they adequately address issues associated with the mining activity such as truck traffic and blasting. It is also important for the Town to recognize that new residential uses are not typically compatible with active quarrying operations. Therefore, the Town should use caution when considering approval of new residential developments near active or future quarries.

Historic Buildings

The Wisconsin Architecture and History Inventory (AHI) is an official inventory maintained by the Wisconsin Historical Society (WHS), which tracks historically significant structures, sites, or objects. These sites collectively display Wisconsin's unique culture and history and, therefore, should be noted and protected/preserved when feasible. Although there are 24 records listed in the AHI for the Town of Holland, none are listed in the national or state registry of historic places. The majority of the records are residences.

While the Town generally desires maintaining a rural atmosphere throughout much of the community, if development should threaten a historical site, the Town should work with property owners to attempt to preserve and refurbish the building in a historically sensitive way rather than to demolish it. Redeveloped historic buildings can be utilized to draw residents and tourists to the Town of Holland as a destination. The Town of Holland should work with the State Historical Society to consider appropriate designation and preservation of potential historic sites as they are identified to maintain examples of the Town culture and history, should development occur.



St. Francis Church, Source: WI Historical Society



East Holland School, Source: WI Historical Society

Parks, Recreation, and Open Space

The Town of Holland has three locations that are dedicated to public use. The largest of the three is the 536 acre Holland State Wildlife Area. The property was first leased in 1951 as a public hunting area. With expansions over the years the area is now primarily used for pheasant hunting and is a popular destination due to its proximity to the Green Bay and Appleton urban areas. Other activities that can be enjoyed at this location include bird watching, cross country skiing (rustic), hiking, trapping, and general wildlife viewing. The second area located at the intersection of CTH Z and St. Pats Church Road is Askeaton Park. The park is the current location of the Town of Holland Town Hall, a baseball field, and a playground with an enclosed shelter. The third location is the Hollandtown Community Park. This 12.6 acre park is located on CTH D on the south side of Hollandtown and offers a baseball field, open space, and an enclosed park shelter. Its proximity to Hollandtown is within a short walk from most residents and it will likely become more centrally located as development occurs in the future.



Recommended Policies, Programs, and Actions

There are many avenues the Town of Holland can take to achieve the natural, cultural, and agricultural resources goal and objectives listed in the plan's Issues and Opportunities chapter. They range from specific one-time actions to broad ongoing programs. These recommendations are addressed in this section.

Farmland Preservation

The Town of Holland is defined by its farmland and agricultural production. The rural character of the Town that residents enjoy is largely dependent upon agriculture. Therefore, protection of the Town's farmlands should be its highest priority, and potential changes in use to farmland through zoning or land divisions will need to be carefully evaluated in terms of costs and benefits to the Town. The following section identifies tools available to the Town to protect its agricultural lands.

Agricultural Zoning

The Town recently amended its zoning ordinance to comply with the requirements of the Wisconsin Working Lands Initiative. This is the next generation of the Wisconsin Farmland Preservation Program, which provides state income tax credits to qualified agricultural producers for agricultural lands zoned within a certified agricultural zoning district. For the Town of Holland, the certified zoning district is the E-A Exclusive Agriculture zoning district, which very clearly identifies agricultural production as the priority within this district. According to the Town of Holland Zoning Ordinance, permitted uses in the E-A zoning district include:

- Agriculture, dairying, floriculture, forestry, general farming, grazing, greenhouses, hatcheries, horticulture, livestock raising, nurseries, orchards, paddocks, pasturage, poultry raising, riding academies and stables, truck farming, game farms, wildlife sanctuaries and game preserves.
- Commercial feed lots and stock farms.
- Single family dwellings for farm operator, a worker who earns a substantial part of his or her livelihood from farm operations on the parcel, or a parent or child of the farm operator.
- Farm ponds.
- Transmission, telephone and telegraph lines, public utility installations, and public highway rights-of-way and improvement projects.

In order to rezone property out of the E-A zoning district, the Town Board must find all of the following in the affirmative:

- The rezoned land is better suited for a use not allowed in the farmland preservation zoning district.
- The rezoning is consistent with any comprehensive plan adopted by the Town of Holland, which is in effect at the time of the rezoning.
- The rezoning is substantially consistent with the Brown County Farmland Preservation Plan, certified under Chapter 91 Wis. Stats., which is in effect at the time of the rezoning.
- The rezoning will not substantially impair or limit the current or future agricultural use of other protected farmland.

When considering rezones out of E-A, the Town Planning Commission and Town Board should very carefully weigh the potential negative impact of rezoning lands out of E-A into other uses and specify very clearly how the proposed rezoning either does or does not meet the aforementioned criteria.

Agricultural Enterprise Areas

As discussed in the Economic Development Chapter, should a group of farmers within Holland decide to pursue designation of an area as an Agricultural Enterprise Area, the Town should support this effort. In addition to providing an additional state tax credit benefit, designation of lands as an Agricultural Enterprise Area would demonstrate to the agricultural related industries (implement dealers, dairies, cooperatives, etc.) that the Town and its agricultural community are committed to agricultural production.

Purchase of Agricultural Conservation Easements

Some communities have had success with the purchase of agricultural conservation easements, also known as the purchase of development rights. This farmland preservation tool benefits the farmer, as well as the community. The farmer can benefit financially on the development potential of the land while still keeping it in production and maintaining all other rights to the land, including the right to live on the land, to continue to farm the land, and to exclude trespassers. The farmer may enjoy reduced income taxes and estate taxes. The monies received for the easement can be used for farm improvements, thus making the farm more productive and economically palatable to the community. In addition, the community will enjoy all of the environmental, aesthetic, and economic benefits of farming while preserving a large area of productive farmland.

While this tool is an effective one for preserving farmland, it is expensive, and not all municipalities can afford its cost. The Town can explore many different options for funding this program, including an increase in building permit fees or property taxes. Holland also could explore the many potential state or federal grant programs that could assist the Town in funding these efforts. One of these programs is the Farmland Preservation Program sponsored by the USDA. This program helps state, tribal, or local government entities purchase development rights to keep productive farmland in agricultural use. If the land qualifies, the USDA has provided up to 50 percent of the cost of purchasing the easement. To qualify, farmland must:

- Be part of a pending offer from a state, tribe, or local farmland preservation program.
- Be privately owned.
- Have a conservation plan.
- Be large enough to sustain agricultural production.
- Be accessible to markets for what the land produces.
- Have adequate infrastructure and agricultural support services.
- Have surrounding parcels of land that can support long-term agricultural production.

The Town of Dunn in Dane County has been very successful in preserving its agricultural land using purchase of development rights. Dunn has received multiple Farmland Preservation Program grants to help with its efforts, allowing them to preserve over 1,700 acres of valuable farmland.

Environmentally Sensitive Areas

The protection of environmentally sensitive areas (ESAs) keep intensive development out of stream corridors, water quality is improved, wildlife habitat is maintained, recreational opportunities are presented, and scenic values are preserved. As discussed in the environmentally sensitive area section of this chapter, ESAs generally include varying setbacks which protect identified floodways, adjacent wetlands, and steep slopes. ESAs remain mostly undeveloped and serve as vital wildlife corridors,

preserve natural beauty, provide storm water management areas, and link ecologically important link parts of the Town together.

Create Vegetated Buffer Strips along Waterways

Through implementation of Chapter 10 of the Brown County Code of Ordinances (Agricultural Shoreland Management) the Brown County Land Conservation Department has been working with rural landowners to provide a cost-share for the installation of vegetated buffer strips along waterways that flow through agricultural areas. Historically, many of these waterways were plowed through and created avenues for fine sediments and



nutrients such as phosphorus and nitrogen to enter the surface water system downstream. Increased



levels of phosphorus and nitrogen can lead to harmful algal blooms, decreased dissolved oxygen levels, and increased stress on forage and sport fish in downstream waterways. The vegetated buffer strips, typically consisting of native grasses, wildflowers, and shrubs, help to filter out suspended solids, nutrients (including phosphorus and nitrogen), fertilizers, and pesticides prior to reaching the actual waterway in the center of the buffer. Additionally, as the buffer strips mature, they create increasingly important wildlife habitat and travel corridors for songbirds, small mammals, reptiles, and amphibians.

Use of Flexible Development Practices

Provided a proposed development does not negatively impact agricultural production, alternative development approaches, such as conservation subdivisions, may provide fewer detrimental impacts to agricultural production, natural resources, and the rural character of the Town. New subdivisions can be designed to preserve natural drainage patterns, reduce fragmentation of wildlife habitat, and limit the amount of impervious surfaces, such as roads. By clustering development on a site, large blocks of environmentally sensitive areas or even prime farmland can be left as preserved open space.



Above: Example of a Conservation Subdivision Layout

Developers and Town officials should strive to encourage preservation of natural areas within newly developed areas. Conservation subdivisions with common open space are required by the Town of Holland for any subdivision development. This allows for the Town to protect areas of woodlands, natural areas, or agricultural areas important to the Town's rural character.

Information and Citizen Participation

Spreading knowledge of the importance of the Town's natural resources, agricultural heritage, and the means to maintain them is an essential implementation tool. For example, providing property owners along the Branch River or its tributaries with information about nonpoint source pollution and providing tips on landscaping and buffering to prevent this pollution can help to achieve improved water quality. Periodic pamphlets or newsletters could be mailed to residents to provide information on such topics as tree trimming tips, invasive exotic species, and other issues relating to natural resource protection. Water resource educational materials are available from the WDNR.

Summary of Recommended Policies, Programs, and Actions

- If zoning is approved, site future residential development in areas that will have as little a negative impact on active farming operations as possible.
- Support Agricultural Enterprise Area designation, should it be proposed.
- Through the Town's newsletter, remind residents of the Town that Holland is an agricultural community and they may have to deal with the sights, sounds, and smells of agricultural activity.
- If an adequate funding source could be found, a purchase of agricultural conservation easement (PACE) program could be a means to permanently protect tracts of agricultural lands from development in the Town.
- Carefully review proposals for rezoning lands out of the E-A zoning district consistent with the requirements of the Town zoning ordinance.
- Consider the use of conservation subdivisions to minimize the visual impact of development on the Town's rural vistas.
- Support stream bank and watershed restoration efforts to improve the water quality of the East River, Plum Creek, Mud Creek and their tributaries.
- When appropriate, require flood studies prior to land division or development adjacent to rivers and small streams when such studies do not exist.
- Coordinate efforts with the Brown County Zoning office regarding permitting requirements and development within the shoreland zone.
- Utilize the online Shoreland Zone / Environmentally Sensitive Area maps to inform the public about additional regulations associated with development within these areas.
- Provide residents with information related to private well maintenance and testing, such as in the WDNR document "You and Your Well" which can be found on the WDNR website under the "Groundwater" link.
- Encourage and support the efforts of the Brown County Land Conservation Department and others regarding installation of stream buffers.
- Provide information to Town residents through the newsletter regarding invasive exotic plant species, water quality, and other natural resource-related issues facing the Town.